DOCUMENT RESUME

ED 227 643 EC 151 629

AUTHOR Madden, Nancy A.; Slavin, Robert E.
TITLE Count Me In: Academic Achievement and Social Outcomes of Mainstreaming Students with Mild Academic Handicaps. Report No. 329.
INSTITUTION Johns Hopkins Univ., Baltimore, Md. Center for the Study of Social Organization of Schools.
SPONS AGENCY Office of Special Education and Rehabilitative Services (ED), Washington, DC.
PUB DATE Oct 82
GRANT G008001494
NOTE 84p.
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Academic Achievement; Elementary Secondary Education; Emotional Adjustment; Exceptional Child Research; Literature Reviews; *Mainstreaming; *Mild Disabilities; Peer Acceptance; *Resource Room Programs; *Special Classes; *Student Adjustment; *Student Placement

ABSTRACT

The paper reviews research on the effects of placement in full-time special education classes, part-time regular classes with resource support, and full-time regular classes on mildly handicapped students. Also examined are programs designed to improve achievement, social-emotional adjustment, and social acceptance of the academically handicapped by their nonhandicapped peers. Studies of placements indicate no consistent benefits of full-time special education on any major outcomes; the research tends to favor full- or part-time regular class placement over full-time special education for the achievement, self-esteem, behavior, and emotional adjustment of the academically handicapped. Differences between full-time regular class placement and part-time regular class placement with resource help tend to favor well-constructed part-time programs for achievement, but not for social-emotional outcomes. Research indicates that cooperative learning programs and individualized instruction programs can improve the self-perceptions and behavior of mainsteamed academically handicapped students and acceptance by their nonhandicapped classmates. (Author/SW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED227645

Center for Social Organization of Schools

Report No. 329
October 1982

COUNT ME IN: ACADEMIC ACHIEVEMENT AND SOCIAL OUTCOMES OF MAINSTREAMING STUDENTS WITH MILD ACADEMIC HANDICAPS

Nancy A. Madden and Robert E. Slavin

The Johns Hopkins University

EC 151 29

STAFF

Edward L. McDill, Co-Director
James M. McPartland, Co-Director

Karl L. Alexander
Henry J. Becker
Jomills H. Braddock, II
Shirley Brown
Ruth H. Carter
Michael Cook
Robert L. Crain
Doris R. Entwisle
Joyce L. Epstein
James Fennessey
Samuel A. Gordon
Denise C. Gottfredson
Gary D. Gottfredson
Linda S. Gottfredson
Edward J. Harsch
John H. Hollifield
Barbara J. Hucksoll
Lois G. Hybl
Richard Joffe
Debbie Kalmus
Helene M. Kapinos
Nancy L. Karweit
Hazel G. Kennedy
Marshall B. Leavey
Nancy A. Madden
Kirk Nabors
Deborah K. Ogawa
Donald C. Rickert, Jr.
Laura Hersh Salganik
Robert E. Slavin
Jane St. John
Valerie Sunderland
Gail E. Thomas
William T. Trent
James Trone

Count Me In: Academic Achievement and Social Outcomes of Mainstreaming Students with Mild Academic Handicaps

Grant No. G-00-80-01494
Office of Special Education
U.S. Department of Education

Nancy A. Madden
Robert E. Slavin

Report No. 329

October, 1982

Published by the Center for Social Organization of Schools, supported in part as a research and development center by funds from the United States National Institute of Education, Department of Education. The opinions expressed in this publication do not necessarily reflect the position or policy of the Department of Education, and no official endorsement by the Department should be inferred.

Center for Social Organization of Schools
The Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218

Printed and assembled by the Centers for the Handicapped
Silver Spring, MD

Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Studies in School Desegregation program applies the basic theories of social organization of schools to study the internal conditions of desegregated schools, the feasibility of alternative desegregation policies, and the interrelations of school desegregation with other equity issues such as housing and job desegregation. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed Student Team Learning Instructional processes for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to post secondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes. The Studies in Delinquency and School Environments program is examining the interaction of school environments, school experiences, and individual characteristics in relation to in-school and later-life delinquency.

The Center also supports a Fellowships in Education Research program that provides opportunities for talented young researchers to conduct and publish significant research, and to encourage the participation of women and minorities in research on education.

This report, produced by the School Organization program under funding from the Office of Special Education, U.S. Department of Education, reviews the research conducted on mainstreaming of students with mild academic handicaps and concludes that mainstreaming is beneficial for the academic achievement and social-emotional development of these students.

Abstract

This paper reviews research on the effects on students with mild academic handicaps of placement in full-time special education classes, part-time regular classes with resource support, and full-time regular classes. It also reviews research on the effects of programs designed to improve the achievement, social-emotional adjustment, and social acceptance of academically handicapped students by their non-handicapped classmates. Methodologically adequate studies of placements of academically handicapped students indicate no consistent benefits of full-time special education on any important outcomes; the research tends to favor full or part-time regular class placement over full-time special education for the achievement, self-esteem, behavior, and emotional adjustment of academically handicapped students. Differences between full-time regular class placement and part-time regular class placement with resource help tend to favor well-constructed part-time programs for achievement, but not for social-emotional outcomes. Research indicates that cooperative learning programs and individualized instruction programs can improve the self-perceptions and behavior of mainstreamed academically handicapped students and acceptance by their non-handicapped classmates.

Acknowledgment

This paper was written under funding from the Office of Special Education, U.S. Department of Education, Grant No. G-00-80-01494. The opinions expressed are those of the authors.

The authors would like to thank Jay Gottlieb, Maynard Reynolds, Margaret Wang, Judith Meece, Max Mueller, and John Hollifield for their comments on earlier drafts of this manuscript.

One of the most controversial and often divisive issues in American education in the past decade is mainstreaming, the placement of students with academic and physical handicaps in regular schools and classrooms. Public Law 94-142 and related judicial decisions have mandated assignment of handicapped students to the "least restrictive alternative placement" possible. This means that many students who were formerly taught in self-contained special education programs are to spend as much time as possible in the regular program, with only as much special instruction outside of the regular class as absolutely necessary. It also implies that the regular program should be adapted as much as possible to accommodate the needs of the handicapped students, with appropriate supports for the regular class teacher.

The mainstreaming movement has required educators to rethink educational placements of all handicapped students, but the greatest impact has been on the education of students with mild academic handicaps. These students, usually referred to as learning disabled (LD) or educable mentally retarded (EMR), make up the great majority of students who have traditionally been taught in separate classes but are seen as good candidates for mainstreaming. Physically handicapped students (including hearing and vision impaired) are often mainstreamed, but the number of such students is comparatively small; trainable mentally retarded or severely and profoundly handicapped students are rarely mainstreamed.

During the 1950's and 1960's, students with mild academic handicaps were increasingly assigned to special classes. One argument for special class placement was that the academic needs of these students could be better met in smaller classes with specially trained teachers and specially designed curriculum materials. Further, it was felt that special classes improved the social development and self-esteem of the handicapped students. Johnson (1950) documented the frequent rejection of academically handicapped students by their non-handicapped peers, and argued that the climate of the regular class was detrimental to the self-concept of academically handicapped students. These and similar findings had a major impact on educators' thinking regarding special education, and throughout the 1950's and 60's, the proportion of students in special classes grew steadily.

However, in the late 1960's, the wisdom of putting students with mild academic handicaps in separate classes was questioned. Dunn (1968) noted that instruction in classes for EMR students was often inferior to that in regular classes. MacMillan (1977) reported that students in these classes were often given a watered-down curriculum by teachers who were often less qualified than regular class teachers (Jones & Gottfried, 1966; Meyers, 1964). Placement in special classes was criticized for labeling students as "special," making it difficult for them to ever re-enter the mainstream (Johnson, 1969). The civil rights movement of

the '60's questioned "separate but equal" class assignments for all students, and in particular focused attention on disproprotionate assignment of minority students to special classes (Christoplos & Renz, 1969; Dunn, 1968). For all these reasons, school districts began to put students with mild academic handicaps back into regular classes for part or all of the day, and parents of handicapped students (especially minority parents) began to push for mainstreaming of their children. This culminated in the passage of PL 94-142, mandating the least restrictive placement for all children.

A variety of educational policies and programs have been developed to implement the "least restrictive placement" provision of PL 94-142. Most school districts now have a continuum of special services for academically handicapped students, ranging from separate special schools to complete integration in the regular class. The goal of "least restrictive placement" is to provide for each child's needs for special instruction directed at well-defined learning problems while involving all children in the regular program as much as possible. Lowenbraun and Affleck (1978) have defined such a continuum that they maintain should be present in all school systems. Their recommended options are described below:

1) Special class placement. The child is primarily assigned to a special class and is integrated with non-handicapped students for as much of the day as the child can be successfully placed.

2) Resource room placement. The child is assigned primarily to a regular classroom and receives individualized assistance, usually in academic subjects in which the student is behind expectation, from a specially trained "resource" teacher outside of his or her regular class for a portion of each school day.

3) Special services. The child is assigned primarily to the regular classroom, but receives assistance in a specialized area, such as reading, mathematics, or speech, from appropriate support personnel on an individual or small group basis, usually one to three times weekly.

4) In-class assistance. The child is assigned to the regular classroom, and receives supportive assistance within the classroom to enable the child to succeed in this setting. This assistance might involve the use of aides, tutors or interpreters.

5) Teacher consultation. The child is placed in the regular classroom, and support is given to the teacher (usually by a "master teacher") to design appropriate curriculum and programs for the child.

As would be the case for any educational innovation of this scope, the implementation of mainstreaming has been uneven, and rarely approaches the ideal described by Lowenbraun and Affleck (1978). When mainstreaming is done well, it appears to make a dramatic difference in the behavior and self-confidence of many academically handicapped students. However, it is not uncommon to see a classroom in which a teacher is teaching twenty-nine students a unit on verb tenses while one "mainstreamed" student is sitting in the back corner coloring or doing nothing at all. Regular class teachers, already overburdened with their usual teaching

assignments, often resist having students with academic handicaps placed in their classrooms (see Alexander & Strain, 1978; Horne, 1979). In one survey (Gickling & Theobald, 1975), 85% of a sample of regular class teachers did not feel prepared to accept academically handicapped students in their classes, and Shotel, Iano, & McGettigan (1972) found that teachers who actually experienced an integrative resource room program became less optimistic about the possible effects of mainstreaming than they were before the program began.

Perhaps for these reasons, many districts have become less aggressive about moving students with academic handicaps into the regular program. There is a corresponding political movement to alter or repeal PL 94-142. Thus, it is now particularly important to carefully examine the evidence concerning the effects of mainstreaming on the students to whom this policy most often applies, those with mild academic handicaps. This paper critically reviews the research that contrasts special class placement, partial mainstreaming, and complete mainstreaming of students with mild academic handicaps into regular classes. Perhaps more importantly, it reviews recent research on programs designed to improve the outcomes of mainstreaming, particularly programs directed at diminishing the rejection of students with mild academic handicaps by their regular class peers--the problem that Johnson (1950) identified as a primary rationale for special class placement.

Mild Academic Handicaps

One serious difficulty in reviewing studies of mainstreaming lies in the definition of the learning problems of the students who are mainstreamed or receiving special services. The students who are the focus of this review are usually referred to as educable mentally retarded (EMR) or learning disabled (LD), although other terms are occasionally used. Use of these terms has changed dramatically over time, and varies from place to place. Many students identified as EMR in 1970 would be labeled as LD (or some other category) today, and might be identified differently in different school districts or states. What is important in this review is that there are students who are administratively defined as being in need of special services because of learning problems, either specific or general. These students are referred to in this review as mildly academically handicapped (MAH), meaning that they have been identified as needing special educational services for a learning problem. However, when authors of articles cited in this review used such designations as EMR or LD to describe their samples, these terms are used in the review.

Mainstreaming vs. Special Class Placement

Scores of studies have compared various effects on students with mild academic handicaps of being placed in regular classes vs. placement in full- or part-time special education programs. However, most of these studies are correlational. That is, MAH students in special classes are compared to a "matched" sample of students in regular classes. Such studies are virtually useless. There are always systematic reasons (e.g., achievement level, IQ, behavior problems) that one student is put into full-time special education while another is mainstreamed. For example, if the special-class and mainstreamed students were matched on IQ, low-IQ students in the regular class would probably be better (on the average) in actual achievement, behavior, or any number of other variables than low-IQ students in the special classes; these non-IQ variables almost certainly had some part in student assignment to regular or special-class placement. These and other serious methodological flaws led earlier reviewers of mainstreaming outcomes (e.g., Cegelka & Tyler, 1970; Goldstein, 1964; Guskin & Spiker, 1968; Kirk, 1964; MacMillan, 1977; Quay, 1963; Semmel, Gottlieb, & Robinson, 1979; Strain & Kerr, 1981) to conclude that the available evidence concerning mainstreaming outcomes was inadequate to provide any useful conclusions, one way or the other. However, recent research involving random assignment and adequate measurement has

changed this situation. There are now enough methodologically adequate studies comparing mainstream and special-class placement to permit some generalizations about the effects of different placements of students with mild academic handicaps.

Academic Achievement Outcomes

Because it is low achievement that defines students as "special," improving the achievement of students with mild academic handicaps is a first priority. Special class placement is intended to enable teachers to better meet the educational needs of low achieving students. However, the research on achievement unequivocally fails to support the instructional effectiveness of special class placement. This research is reviewed in the following sections.

Full-Day Special Placement vs. Full-Day Regular Class Placement. Several early studies that examined academic achievement of full-time special and regular class placements for EMR students concluded that regular class placement produced superior achievement for these students (Blatt, 1958; Elenbogen, 1957; Thurstone, 1959). However, in each of these studies, matched rather than randomly selected groups of students were studied. Matching was usually done on such variables as IQ, chronological age, mental age, and sex. These studies provide a very poor means of comparison between the two methods of educating mentally retarded students, because it is unlikely that the groups were comparable in the first place (see above). Their findings cannot be considered valid.

Later studies used more adequate controls. Two studies used random assignment of students to special or regular

class placement, as well as some mechanism to control for differences in teacher competence, in order to evaluate the impact of placement per se on academic achievement. The best evidence of superiority of regular class placement over special education for MAH students is provided by Calhoun and Elliott (1977). They randomly assigned EMR and emotionally disturbed (ED) students who were on a waiting list for special education to full-time special education classes or to regular classes. The students were assessed on the Stanford Achievement Test every fall and spring for three years following placement in the different settings. The longitudinal sample consisted of 50 EMR and 50 ED students, evenly divided between the regular and special classes. All students were black. The mean IQ for the EMR students was 72.4, and for the ED students was 98.13. Teachers, all of whom were certified in special education, rotated across classes each semester, alternating special and regular classes. Curricula (primarily individualized instruction), materials, and equipment were the same in the special and regular classes.

The results of the Calhoun and Elliott (1977) study clearly indicated that placement in regular classes had a more positive effect on the achievement of both EMR and ED students (analyzed separately) than did special class placement. Despite the random assignment, the special class EMR and ED students were significantly higher in achievement

than their regular class counterparts on the pretest. By the end of the first year, this difference had disappeared, and by the end of the second year, the students assigned to the regular classes scored significantly better. At the end of the third year, the EMR and ED students in the regular classes were markedly superior in achievement to EMR and ED students who had been assigned to special education.

These results are remarkable for several reasons. First, use of random assignment from a waiting list of children eligible for special education insured both that selection bias would not be a problem and that the students involved were those who would ordinarily have gone into special education. Second, rotation of teachers certified in special education across treatments largely removed the problem of teacher effects. If anything, this rotation should have favored the special classes, for which the teachers were trained. Use of similar instructional methods and materials in the regular and special classes removed these factors as possible explanations for the differences found. Finally, the longitudinal measurement, showing a widening gap over time favoring the students in the regular classes, provides convincing replication of the differences first observed at the end of the second year. It is important to note that the "regular class" in this study was not typical, and was in many ways specially designed to meet the needs of MAH students. The teachers were special education teachers, and the curriculum was primarily individualized.

In another carefully designed study, Goldstein, Moss, and Jordan (1965) constructed what they felt to be an ideal special education program, using specially trained and selected teachers and intensive supervision of these teachers by qualified supervisors. In this study, 1,938 children with IQ's below 85 were randomly assigned to special or regular classes upon entering the first grade. At the end of the first two years of the study, students in the regular classes showed superior reading skills, but at the end of four years, there were no differences between the groups. No differences were found between the groups on arithmetic achievement at any point. The failure of the study to demonstrate positive results for the special class program was not anticipated by the researchers, who concluded that if such an intensive, well-designed special education program did not increase student achievement more than placement in regular classes, then the less well-designed programs found in more typical special education programs certainly would not be more effective than placement in regular classes.

The findings of the Calhoun and Elliott (1977) study--that regular classes designed to meet the needs of MAH students are superior to special classes when curriculum and teacher variables are controlled--suggests that there is some factor related to heterogeneous placement that serves to enhance student achievement. This corresponds with

research findings of studies of tracking in regular classes (see Esposito, 1973), which consistently indicate that low-achieving students do better in untracked classes than in homogeneous low-track classes. It may be that careful programming in a special class placement may make up for the loss of the benefits of heterogeneous placement (as may have been the case in the Goldstein, Moss, and Jordan, (1965) study, but there is little evidence to suggest that MAH students are likely to learn more in special classes than in regular ones with current typical supports under any circumstances.

Part-Time Resource Programs vs. Full-Time Education. In an effort to capitalize on the best features of special classes as well as those of regular class placement, many mainstreaming programs provide special teaching assistance to MAH students who remain primarily placed in a regular class. Although the methodologically adequate research on the efficacy of such programs compared to full-time special education placement is even scantier than that on the special class-regular class comparison, some data do exist.

In a study by Carroll (1967), all eligible mentally retarded students were selected from waiting lists of five large suburban school districts, and assigned to part-time resource programs or full-time special classes based on the policy of each of the school districts. Thus, this study

was at least comparing a common pool of students who had been systematically assigned to one or another program. The groups were compared on 19 variables and were found to differ only on two, so they were judged comparable. After a study period of eight months, the resource group was found to have made significantly greater gains in reading, but not in arithmetic or spelling. These findings can be interpreted as suggestive evidence that a resource program may be more effective in reading, but other factors may also explain the findings. It is possible that the districts employing the resource program (the more unusual and innovative program at that time) may have put more effort or resources into those programs. Teacher quality and curriculum were also uncontrolled.

In the one comparison of part-time resource placement and full-time special education which used random assignments, Budoff and Gottlief (1976) assigned 31 EMR students previously assigned to special classes to either a learning center (resource program) for 40 minutes each day or to full-time special classes. They found no differences in achievement between the students in the different placements.

Thus, the differences in achievement effects between part-time resource programs are unclear. Carroll (1967) found greater achievement for students in the part-time

resource programs but the samples were matched instead of randomly assigned to conditions, which may lead to spurious findings favoring the integrated groups (as noted earlier). Budoff & Gottlieb (1976), who did randomly assign students to conditions, failed to find any differences in achievement.

Part-Time Resource Program vs. Full-Time Regular Class Placement. Two studies have compared the effects of part-time resource programs and full-time regular class placement. Glavin, Quay, Annesley, & Werry (1971) randomly assigned 61 behaviorally disturbed, low achieving students either to participate in a special resource room program 1-2 days per week or to remain in their regular classes. The resource program used a token economy reinforcement system for behavioral control and to reward rapid, accurate work. The results of this experiment indicated that students who received the resource room treatment gained significantly more than control students in reading comprehension and arithmetic fundamentals.

In contrast, Smith and Kennedy (1967) found no differences in academic achievement between EMR students who were randomly assigned to receive either 45 minutes of special instruction per day, 45 minutes of non-instructional activity outside of class each day, or full-time regular class placement. Unlike Glavin et al., Smith and Kennedy (1967)

provided no specially developed treatment to the students who participated in the part-time resource program.

The different results of the Glavin et al. (1971) and Smith and Kennedy (1967) studies would suggest that it is not resource placement per se that increases the achievement of MAH students, but participation in a well-designed, carefully implemented part-time program.

Conclusions: Academic Achievement Outcomes

1. There is no evidence that special class placement is superior to regular class placement for the achievement of students with mild academic handicaps. Regular class placement may be more effective than special classes for MAH students if the regular class program is designed specifically to meet the needs of MAH students.

2. Regular class placement with resource services may potentially produce better achievement for MAH students than either full-time special class placement or full-time regular class placement, but this appears to depend largely on the quality of the resource program.

Social-Emotional Outcomes of Special Programs

Most studies of the social-emotional outcomes of special education programs have focused on the development of self-concept and on other intrapersonal indicators of social

adjustment. Early but still frequently cited studies on the outcomes of special classes compared to regular classes were interpreted to indicate that MAH students attending special classes were better adjusted socially and emotionally than were similar students attending regular classes. However, the methodology employed in these studies frequently raises serious questions about the validity of the findings. Elenbogen (1957) studied a matched group of special and regular class educable mentally retarded students using rating scales and interview questions devised for the study. The special and regular class teachers of the students were asked to rate their adjustment. The ratings indicated that the special class students were superior in adjustment. Cassidy and Stanton (1959) reported similar findings in a similarly designed study, again using teacher ratings as the major source of information. However, further information from this study suggests that special and regular teachers do not judge their students on similar criteria. Special class teachers tended to rate their students as well or poorly adjusted based on characteristics such as personal appearance and social compliance, while regular class teachers rated the children's adjustment more on the basis of their ability to acquire academic skills and their expectations about their future educational success. Ratings by teachers exhibiting such different expectations of the educable mentally retarded students cannot be considered comparable.

The special class teacher would probably consider certain behaviors acceptable while the regular classroom teacher would not. The regular class teacher, using the non-handicapped student as the basis for comparison, tended to confound learning problems with personal and social adjustment. Although these two studies may contribute information about the differing processes of these two settings, they do not contribute meaningfully to an understanding of the different outcomes.

Later studies assessing social emotional outcomes of special and regular class education for educable mentally retarded students utilized better experimental designs. Two studies compared special class placement to regular class placement with no additional help to assess the effect of special class placement on the self-concept of the special child. In the study by Calhoun and Elliott (1977) described earlier, EMR and ED students randomly assigned to regular classes were found to have more positive self-concepts than those assigned to special classes. Self-concept was measured by the Piers-Harris Children's Self-Concept Scale (Piers and Harris, 1969), a well-standardized and validated self-concept measure. Controls for the effects of individual teachers or differences in curriculum between the treatments were employed. By the end of the second year, findings indicated that both the EMR and the ED students educated in the regular classes had higher self-concepts

than those in the special classes. These differences were even larger by the end of the third year of the study, paralleling the findings for academic achievement described earlier.

These very strong effects of regular class placement are supported in a study by Meyerowitz (1962). Meyerowitz randomly assigned educable mentally retarded first graders to special education classes or to their regularly assigned first grade classes. No controls for the effects of individual teachers or curriculum were employed in this study. After a year, the subjects were tested on the Illinois Index of Self-Derogation, an instrument developed for the study, on which the child was asked to indicate which of two stick figures he or she was most like. The stick figures were given a series of opposing descriptions. For instance, one sentence would describe one of the figures as having a certain positive characteristic such as: "Many children like the child with the balloon." The second sentence would describe the second figure as having a negative characteristic, such as "Some children do not like the child with the flag." The number of times that the child indicated the negative option as being most like him or herself was considered to be an index of self-derogation. Contrary to the hypotheses of the study, it was found that children in the regular classes endorsed fewer self-derogatory statements than did the children in the special class. Specific state-

ments endorsed more frequently by the group of special class children included the following:

-- Kids like to make this child cry.

-- Some kids say nasty things about this kid.

-- This child is not the same as other children.

While the measure of self-concept is a somewhat unusual one and its validity is unknown, it seems apparent that students in a special class placement were willing to endorse more negative statements as being like themselves, and this may indicate poorer self-concepts for these children. Examination of the specific items more frequently endorsed indicates that poor peer relationships were more apparent for the special class children.

Carroll (1967) assessed the development of self-concept in a segregated special class as compared to a program in which students were integrated into regular classes on a part-time basis. The integrated students spent half of their time in a special class and half in a regular class. Students from five different school districts were studied. Students were not randomly assigned to placements, but were assigned to segregated or integrated placements on the basis of the policy of their respective school district. Based on responses to the Illinois Index of Self-Derogation, the partially integrated students showed higher self-concepts (fewer self-derogations) than did the segregated students.

Measures of social adjustment other than self-concept have been used in a series of studies conducted by researchers at the Research Institute for Educational Problems. In these studies, educable mentally retarded students who were previously assigned to special classes were randomly assigned to remain in special classes or to attend a regular class with resource room support. Gampel, Gottlieb and Harrison (1974) and Gottlieb, Gampel and Budoff (1975) present data concerning the behavior of integrated or segregated educable mentally retarded children. In the first study, data were collected about four months after the students were reintegrated into the regular classroom. In the second, students were observed the spring before integration, two months after integration, and the spring following integration. In both cases, the behavior of integrated special students was more similar to the behavior of non-handicapped students than it was to the behavior of the segregated students. One hypothesis regarding these effects is that models for behavior and peer expectations for behavior are likely to be quite different in the regular class than they are in the special class. More models for negative peer behavior are likely to be found in the special class.

Using a broad range of measures of personal and social growth, Budoff and Gottlieb (1976) also evaluated outcomes of special class placement compared to regular class placement with resource help. After one school year, educable

mentally retarded children who were reintegrated into regular classes were found to be more internally controlled, to have more positive attitudes towards school, and to be more reflective in their behavior. The authors were able to qualify their findings by identifying two groups of students within their sample of educable mentally retarded students. They used a technique that attempted to identify learning potential, rather than IQ, by presenting a child with training on a portion of Raven's Progressive Matrices, and determining how much was learned from the training. The students classified as high in learning potential based on this technique were found to benefit much more from integrated placement than were those who were found to have lower learning potential. However, regular class placement with resource help was superior for both groups.

The findings of the better designed and controlled studies comparing the outcomes of education of the MAH child in the segregated special class to the outcomes of education in a regular class with varying kinds of support indicate that the regular class promotes better social-emotional outcomes, as assessed on a broad range of measures. The regular class is superior in situations where the support was provided within the regular classroom in the form of specially trained teachers and a special curriculum (Calhoun and Elliott (1977)) and in situations where regular class placement was supplemented by special resource help. Only one

study utilized no form of support (Meyerowitz, 1962). In no case did more positive results occur for children placed in special classes.

Many of the researchers comparing special and regular class placements for academically handicapped students included resource help as a component of their regular class placement. It was felt that the resource help would provide individualization to facilitate the academic growth of the special child and would provide a situation where social-emotional growth could occur, as students would be succeeding within a peer group of comparable ability. Also, the resource teacher could provide direct support and training in social-emotional areas to facilitate growth (Budoff and Gottlieb, 1976). Clearly, the addition of resource help to the program of the special child in the regular class has been perceived as important and sometimes critical to the successful integration of the special child in the regular classroom.

Little research has examined the hypothesis that social-emotional gains will be greater for the special child in the regular classroom who receives resource help than for the child who spends his entire day in the regular class, and the findings of this research are mixed.

Smith and Kennedy (1967) found no differences between groups of educable mentally retarded students randomly

assigned to receive 45 minutes of special instruction per day, 45 minutes of non-instructional activity outside of the classroom per day, or full-time regular classroom placement. The students were studied over a two-year period, and the measures included the Vineland Social Maturity Scale and Johnson's (1950) sociometric measure. Part of the reason for the no-effects finding may be that the Vineland Scale is insensitive to school-related social changes, because it focuses on social-adaptive behavior that would be more apparent in the home situation than in school. However, the lack of difference between the groups on the sociometric measure is important to note given the very poor sociometric position of educable mentally retarded students in the regular classroom (Johnson, 1950). The particular intervention utilized in this study did not appear to provide the social-emotional support hypothesized to be effective in facilitating social-emotional growth.

Another study, focusing on behavior-problem children who were also performing below grade level academically, also found few differences between part-time resource placement and full-time regular class placement on social-emotional outcomes (Glavin, Quay, Annesley, and Werry, 1971). In this study, part-time placement in a carefully designed resource program based on the principles of reinforcement theory and classroom behavior modification was compared to full-time regular classroom placement. Students were randomly

assigned to the resource program or to remain in the regular class. Findings indicated that the behavior of students assigned to the experimental program improved in the resource room, but that the improvement did not generlaize to their time in the regular class. The lack of generalization is not surprising--many studies using such behavioral interventions have found that generalization does not occur spontaneously, but must be engineered (see Stokes and Baer, 1977).

Conclusions: Social Emotional Outcomes

Regular class placement with some form of support (either within the regular class or in a resource program) is superior to special class placement for improving the self-concepts and adaptive classroom behaviors of MAH students. MAH students who are mainstreamed in regular classes are also lower in self-deprecation and negative peer behavior than similar students in special classes. The specific characteristics and quality of the support program appear to be crucial variables in achieving the desired outcomes.

Education in the Mainstream: Continuing Problems

The research reviewed above indicates that mainstreaming students with mild academic handicaps in regular classrooms with various forms of support can be more effective for both achievement and social-emotional outcomes than placement in full-time special classes. This conclusion should not be construed to mean that special education can be abandoned or that MAH children should simply be moved back into regular classes and forgotten. Problems in the mainstream setting led to the development of special classes, and current evidence indicates again that placement of MAH students in regular classes is still fraught with problems. The fact that regular class teachers feel poorly prepared to accommodate the needs of academically handicapped students (Gickling & Theobald, 1975) is still a serious problem. Further,

when MAH students participate in the regular program, they are still likely to be as rejected by their classmates as similar students were in Johnson's (1950) early study.

Recent research provides evidence that learning disabled and educable mentally retarded students in regular classes are in fact less accepted and more rejected than their non-handicapped classmates. Students classified as learning disabled (i.e., who are of normal intelligence but not performing up to grade level expectations), have been frequently studied (Bruininks, 1978; Bryan, 1974, 1976; Scranton and Ryckman, 1979; and Siperstein, Bop and Bak, 1978). In each case, learning disabled students mainstreamed into regular classes for more than half of their school day were assessed on sociometric measures (Moreno, 1934). Children were asked to name their friends or children they liked, to name children they did not like, and so on. In some cases, children were asked to name children with specific qualities; for instance, they might have been asked to name the child who was the best athlete in the class, or a child who could not sit still. All these studies were conducted in elementary classrooms, in grades one through six. The findings consistently show that learning disabled children in all elementary grades were less well accepted and more frequently rejected than their regular class peers.

Studies of mainstreamed educable mentally retarded children reveal that these children also experience poor social status within the regular classroom. Several kinds of sociometric techniques were used to assess social status. In two studies (Bruininks, Rynders, and Gross, 1974; Goodman, Gottlieb, and Harrison, 1972), students were asked to rate each child in the class on a scale indicating whether that child was a friend, was all right, or that they did not like him or her. Pictorial cues showing stick figures playing, neutral, or with backs to each other accompanied the classifications. A similar measure was used by Gottlieb, Semmel and Veldman (1978) except that faces with a smile, a straight line, or a frown were used for pictorial cues. Three other studies (Iano, Ayers, Heller, McGettigan, and Walker, 1974; Lapp, 1957; and Rucker, Howe, and Snider, 1969) used more traditional sociometric techniques in which children were asked to list their friends (Moreno, 1934) or were asked to name children having specific qualities, such as academic skills and attractiveness (Garry, 1962). The findings again show less social acceptance and more rejection for educable mentally retarded students, with one exception. Lapp (1957) found that educable mentally retarded students were less well accepted but not more rejected than regular class peers.

In addition to the continuing problems of poor social relationships between MAH and non-handicapped students,

other problems are inherent in classes that contain such a wide range of abilities. Teachers must prepare instruction that will be appropriate to all members of the class. Often a lesson directed to students at one level is too difficult or too easy for students at another. This situation can lead to frustration or boredom on the part of students at the low or high ends of the academic skills continuum. In turn, these feelings can precipitate behavior problems and lack of motivation to learn. Teachers often feel that they do not have the special skills needed to effectively construct a lesson for children with learning problems, as they have not received special training in these areas (see Gickling & Theobald, 1975). Some teachers may feel as if time spent in developing such lessons, or in managing the behavior or motivational problems of MAH students, takes away from time they should be spending with their other students, who are more likely to profit from their efforts. Mainstreamed students with academic handicaps are thus likely to be seen as an additional burden placed on teachers, with attitudes becoming less positive as experience with mainstreaming increases (Shotel, Iano, and McGettigan, 1972).

Research on Programs to Improve the Outcomes of Mainstreaming

The research reviewed above suggests that special programming within the context of regular class placement holds

the greatest potential for improving academic and social emotional outcomes for MAH students. It therefore seems critical to develop and evaluate programs that can be used within the context of mainstream education to meet the needs of academically handicapped students. The development of special resource programs, reviewed earlier, demonstrates one approach to providing necessary academic and social supports. Another approach is to intervene within the mainstream classroom itself. Strategies that take this approach are reviewed below.

Interventions most often proposed to improve the outcomes of mainstreaming are of three types. Some reviewers (see Gottlieb & Leyser, 1981; Gresham, 1981) suggest that the problem of social rejection of mainstreamed MAH students be remedied directly by providing social skills training to academically handicapped students. However, the largest amount of research has focused instead on interventions designed to reorganize the regular classroom so that it becomes more receptive to individual differences and more likely to elicit pro-social and accepting behavior on the part of all students. Most such research has focused on cooperative learning interventions (see Slavin, 1980a), in which MAH and non-handicapped students work together in small groups to achieve common goals. Other research involving restructuring of the entire class has involved individualized instruction methods, designed primarily to

deal with the problem of heterogeneity in learning rates and styles brought about by mainstreaming. The research on these proposed solutions to the problems of mainstreaming is reviewed in the following sections.

Social Skills Training

One potential way to increase the social acceptance of mainstreamed MAH students is to train them in social skills that are important in making friendships. These programs are based on the frequent observation that academically handicapped students often have deficits in appropriate social behavior (see Bryan, 1978). A substantial literature on social skills training has been reviewed recently by Gottlieb & Leyser (1981); Gresham (1981); Strain, Kerr, & Ragland (1981), and Van Hasselt, Hersen, Whitehall, & Bellack (1979). All of these reviews concluded that children who are poorly accepted by their peers can be taught appropriate social skills through such procedures as modeling, coaching, or reinforcement for exhibiting appropriate social behaviors and/or friendly initiations, although maintenance and generalization of these behaviors is still problematic. None of the methodologically adequate studies cited in these reviews involved mainstreamed students; instead, they involved either academically handicapped or emotionally disturbed students in self-contained classes (e.g., Marburg, Houston, & Holmes, 1976; Strain, 1975) or poorly accepted (but not necessarily academically handicapped) students in regular

classes (e.g., Gresham & Nagle, 1980; Oden & Asher, 1977). However, the success of these methods suggests that any of several social skills training methods may be effective in increasing the appropriate social behavior and acceptance of mainstreamed MAH students.

Cooperative Interventions

By far the most widely researched methods designed to improve the social status, behavior, and achievement of mainstreamed MAH students involve structuring cooperative goals and/or tasks between handicapped and non-handicapped students. These interventions are based primarily on Allport's (1954) contact theory of intergroup relations, which concerns relationships beteen blacks and whites but which can be applied to some degree to any situation in which two groups are prejudiced or hostile toward one another. Briefly, Allport's theory holds that positive intergroup relations depend on the conditions under which members of the groups come into contact. These conditions are as follows:

1. Non-superficial contact that allows group members to get to know one another;
2. Cooperative, rather than competitive goals;
3. Contact between members of the different groups sanctioned and encouaged by authorities; and
4. Equal status between the members of the different groups.

Various investigators have evaluated a wide range of cooperative activities between MAH and non-handicapped students, ranging from swimming (Martino & Johnson, 1979) to group skits (e.g., Chennault, 1967) to long-term cooperation on academic tasks (e.g., Madden & Slavin, in press). Whatever the particulars of these cooperative interventions, all of them satisfy three of Allport's four criteria. Cooperative goals and tasks give students a chance to get to know one another as individuals and to cooperate rather than compete. Because teachers or other adults assign MAH and non-handicapped students to work together, it is clear to the students that interaction between handicapped and non-handicapped students is encouraged by the adults in charge. The issue of equal status is somewhat problematic, because the handicapped students are likely to be seen as lower in status than their non-handicapped peers. However, most cooperative interventions deal with this problem by engaging MAH students in activities (such as sports or skits) at which they are likely to do as well as other students, or in the case of academic cooperation, using group scoring systems in which groups are evaluated based on the progress of their members in individualized materials (Slavin, Madden, & Leavey, 1982) or on their improvement over their own past performance (Madden & Slavin, in press).

Much of the research on cooperative interventions designed to increase the social acceptance of mainstreamed

MAH students has involved short-term treatments applied outside of the class in which students are mainstreamed. Chennault (1967) attempted to improve the social status of selected low status EMR students within the special class. Unpopular junior and senior high school special class children were paired with popular special class children, and these pairs were taken out of the classroom for 15 minutes twice a week to plan, rehearse, and present a dramatic skit. The skit was presented to the class at the end of five weeks. A control group of low status students remained in the class. Social acceptance, as measured by a scale in which each student rated each other student on how much he or she wanted that student as a friend, improved for the students in the experimental group significantly more than for the control group. It would seem that the effect of this treatment would be to change the perception of the low status child by the child's classmates, perhaps by enabling the child to demonstrate competence in a special area and by pairing him or her with a high status child.

Replicating this study, Rucker and Vincenzo (1970) found the same initial effects, but follow-up measures indicated that these effects had dissipated within one month after treatment. This study resembled the Chennault (1967) study in population, design, treatment and measures, except that the pairs of students met for 45-minute sessions twice per week for only two weeks to plan a carnival rather than a

skit for their classmates. A sociometric posttest was conducted three days after the carnival, and a follow-up test was conducted one month later. The posttest showed a gain in acceptance for the low status students, as in Chennault's study; at follow up, however, there were no differences between the groups.

Lilly (1971) studied a similar intervention to improve the social status of low achieving students (not identified as learning disabled or educable mentally retarded) within the regular classroom. He paired popular and unpopular students and removed them from the class for two fifteen-minute periods a week for five weeks. During this time, the students made a movie, which was presented to the class at the end of the project. Four other treatments, which isolated components of the full treatment, were also compared to a control group. In one of these, designed to evaluate the experimenter's influence on the group, a student leader was selected to lead the group while the experimenter withdrew as much as was possible. In a treatment designed to isolate the effect of pairing low status children with popular peers, only low status children participated in the treatment. To assess the effect of removing the students from the class during the regular school day, one group was assigned to complete a project in class rather than outside of the class. Lilly's findings showed significantly greater improvement in peer acceptance for all of the treatment

groups, analyzed as a group, as compared to the control group. No single treatment group, even the full program, was found to be superior to the others. This suggests that simply involving the child in a special activity improved the social status of the low status children in this study. However, the follow-up conducted six-to-seven weeks after the end of the intervention found that the gains were not maintained; there were no differences between the treatment and control groups. It would thus appear that short-term, high-intensity interventions may not produce a lasting change in the social status of low status students.

A more intensive cooperative intervention was evaluated by Ballard, Corman, Gottlieb, & Kaufman (1977). They randomly assigned 37 classes to experimental or control conditions. Each class had one EMR student. In the cooperative classes, students were assigned to 4-6 member heterogeneous groups (one of which contained the EMR student). The group members worked together forty minutes per day every day for eight weeks to plan, produce, and present a multi-media project. The results indicated that EMR's in the experimental groups were better accepted by their classmates than were control EMR's. However, there were no statistically significant differences between the treatments in rejections of EMR students by their classmates.

A few studies have demonstrated that cooperative interventions involving academically handicapped and non-handicapped students outside the school setting can increase positive interactions. Martino & Johnson (1979), in a summer swimming program, assigned some students to pairs of learning disabled and non-handicapped students, and some to swim individually. The frequency of friendly interactions between the learning disabled and non-handicapped students was much higher in the "pairs" condition than in the individual swimming condition, and hostile interactions were less frequent. Johnson, Rynders, Johnson, Schmidt, and Haider (1979) compared cooperative, individualistic, and laizzez-faire interventions in bowling activities involving non-handicapped and retarded (high-trainable) adolescents. Again, more friendly interactions between non-handicapped and retarded students were seen, although there were no differences in negative (hostile) interactions.

In a similar study, Rynders, Johnson, Johnson, and Schmidt (1980) found more positive interactions between non-handicapped and Down's syndrome students in cooperative bowling groups than in competitive or individualistic ones. Non-handicapped students in the cooperative conditions also ranked the Down's syndrome students marginally higher ($p < .10$) as students with whom they would most like to bowl than they did in the competitive or individualistic conditions, and the Down's syndrome students ranked the non-handicapped

students higher in the cooperative than in the competitive or individualistic conditions. A separate analysis from the same study (Johnson, Johnson, & Rynders, 1981) also found that students in the cooperative condition felt they were better bowlers than did students in the competitive or individualistic conditions.

The bowling and swimming studies are interesting as demonstrations, but because they measured interactions (and, in one case, rankings) that have meaning only in the context of the settings and interventions, their relevance to academic mainstreaming or to changing attitudes toward the handicapped is limited.

Longer-Term Cooperative Learning Interventions

The repeated failure to find long-lasting effects of special short-term cooperative classroom interventions designed to improve the status of the mainstreamed children suggests that cooperative learning programs that are designed for longer use may be required in order to fundamentally change the acceptance of these children. There is good reason to believe that the structure of the traditional classroom contributes to negative affect toward low-performing students. Students in almost all classrooms are in competition with one another for acceptable grades and other rewards (Johnson & Johnson, 1974; Slavin, 1977). Only a few, those who do better than the others, will receive A's. The academically

handicapped special child, who is inevitably on the "losing" end of the competition more frequently than on the "winning" side, is no doubt an appropriate target for expression of the negative feelings found to be generated in competitive situations.

A study of childrens' attitudes concerning the extent to which another child deserved a reward under a competitive reward structure showed that children who were unsuccessful under competitive conditions were seen as less deserving of rewards by those who were successful. Under non-competitive conditions, no such differences were observed (Ames, Ames, and Felker, 1977). The deprecating comments common in competitive situations (Stendler et al., 1951) could thus be expected to fall upon the special child more frequently than on other, more academically competent children. Growth of friendship and acceptance is unlikely in this situation. The findings of Rucker and Vincenzo (1970) and Lilly (1971), that gains in sociometric status for low status children were not maintained after the brief cooperative interventions designed to improve status were completed, should not be surprising in light of the fact that these children returned to the usual competitive structure of the classroom.

The short-term cooperative interventions have operated on the assumption that once the student's status is improved,

social forces will maintain the improvement. But given the competitive structure of the traditional classroom, this assumption seems unlikely. A cooperative intervention that changes the competitive structure and which can be embedded in the ongoing classroom system may be required to bring about lasting improvement in the social status of mainstreamed MAH students (see Gresham, 1981; Johnson & Johnson, 1980).

Cooperative Learning

The most promising means of embedding cooperation between academically handicapped and non-handicapped students into the ongoing classroom system to improve the social acceptance of the MAH students is the use of cooperative learning methods that are already in wide use for other purposes. Slavin (in press) has recently reviewed the field experimental research on cooperative learning methods, in which students work in small, heterogeneous learning teams in the classroom. In more than three dozen methodologically adequate experiments conducted over periods ranging from two weeks to two years, various cooperative learning methods were generally found to have more positive effects than traditional control methods on student achievement, time on-task, race relations, self-esteem, and other outcomes. These techniques can be used indefinitely as the primary means of delivering instruction, and several thousand teachers do so (see Hollifield & Slavin, in press; Slavin, 1981).

The positive effects of the cooperative learning methods on regular students and the widespread acceptance of these methods are important for the mainstreamed classroom. As a practical matter, a technique designed to benefit mainstreamed MAH students must also clearly benefit non-handicapped students, if it is to be used by many regular teachers.

Student Teams-Achievement Divisions (STAD). The most widely used cooperative learning methods are the Student Team Learning methods developed at Johns Hopkins University (Slavin, 1980a), including Student Teams-Achievement Divisions, or STAD; Teams-Games-Tournament, or TGT; and Jigsaw II (see Slavin, 1980b). Of these, only STAD has been evaluated for effects on mainstreamed MAH students. In this study (Madden & Slavin, in press), six elementary mathematics classes were randomly assigned to STAD or control treatments. In the STAD groups, students were assigned to four-member teams that were heterogeneous on past academic performance and sex. Academically handicapped students were evenly distributed among the teams. Following an initial teacher presentation, the students studied worksheets in their teams, and were then individually quizzed. Team scores were computed based on the degree to which each team member improved over his or her own past record, making success equally available to team members of all levels of achievement. Teams with average improvement scores above a certain criterion were recognized in a weekly class newsletter.

Their study found that the academically handicapped students in the STAD classes were significantly less often rejected as potential workmates (on a sociometric instrument) than were MAH students in the control classes. However, there were no differences in friendships directed toward the MAH students. The STAD students as a whole gained significantly more in mathematics achievement and self-esteem than control students, but while there were differences in the same direction for the MAH subsample, these differences were not statistically significant.

Team Assisted Individualization (TAI). TAI is the only cooperative learning intervention specifically developed (under funding from the U.S. Office of Special Education) to improve the outcomes of mainstreaming for MAH students. TAI combines cooperative learning with individualized instruction, to allow for use of the program in very heterogeneous classes while maintaining the social and motivational benefits of cooperation (see Slavin, 1980a). The one study of TAI and mainstreaming (Slavin, Madden, & Leavey, 1982) involved eighteen elementary mathematics classes randomly assigned either to TAI, to a "materials only" treatment in which the individualized materials and procedures but not the cooperative teams were used, or to a control treatment. In the TAI classes, students worked in four-member heterogeneous teams like those used in STAD (Madden & Slavin, in press). The students were pretested and placed in an indi-

vidualized mathematics curriculum based on their test performance. Students then worked on individualized packets at their own level. Teammates checked each others' answers and helped each other with problems. Team scores were computed based on the average number of units completed by all team members and on the team members' scores on summative tests taken outside of the team; all teams that exceeded a preset criterion received attractive certificates. The materials-only classes used the same curriculum materials and general procedures, except that they did not work in teams or receive team rewards. The control group was untreated.

The results indicated that mainstreamed MAH students in the TAI and materials-only classes were named significantly more often as friends and significantly less often rejected than were control MAH students. Academically handicapped TAI students were rated by their teachers as having fewer behavior problems than control students in the areas of classroom behavior, self-confidence, friendships, and negative peer behavior. On the classroom behavior and self-confidence scales, the MAH students in TAI were also rated as having fewer problems than materials-only MAH students, and materials-only students had better behavior ratings than control students on self-confidence, friendships, and negative peer behavior. The changes in behavior ratings for the TAI students were dramatic; they were rated much worse than non-handicapped students on the pretest, but were equal to

them on the posttest. As in the STAD study (Madden & Slavin, in press), the full sample of students in the TAI classes learned significantly more than control students (Slavin, Leavey, & Madden, 1982), but the achievement differences were not statistically significant for the MAH subsample.

Learning Together. The largest number of cooperative learning studies of mainstreaming have involved methods developed by David and Roger Johnson and described in their book, Learning Together and Alone (1975). In these studies, students were individually randomly assigned to cooperative, individualistic, or (in one study) competitive treatments. In the cooperative classes, students were assigned to heterogeneous groups in which they worked together to complete common worksheets. The teacher praised and rewarded the groups. In the individualistic classes, students were not allowed to interact, and were praised and rewarded as individuals.

The results of the Learning Together studies on acceptance of academically and emotionally handicapped students are inconsistent, but generally positive <1>. Cooper, Johnson, Johnson & Wilderson (1980) found significantly more friendship choices directed at academically or emotionally

---

<1> Some of the Learning Together studies used one-tailed t-tests. These results are presented as though two-tailed t-tests or F-tests had been used for the sake of comparability.

handicapped students in a cooperative condition than in an individualistic one, but there were no differences between the cooperative condition and a competitive one in which students worked in equal-ability clusters and were praised and rewarded for doing better than their cluster-mates. Armstrong, Balow, & Johnson (1981) found no differences between cooperative and individualistic treatments on sociometric measures. They did find positive effects on two peer-rating scales on which students rated one another from smart to dumb and from valuable to worthless, but there is no separate analysis of the ratings of the academically handicapped students.

Four of the Learning Together studies measured interactions between handicapped and non-handicapped students during free-time periods immediately following class. One of these found significantly more cross-handicap interaction in the cooperative treatment (R.T. Johnson & D.W. Johnson, in press a), and one additional study (R.T. Johnson & D.W. Johnson, in press b) found marginally significant positive effects. The remaining two studies (D.W. Johnson & R.T. Johnson, in press; R.T. Johnson & D.W. Johnson, in press c) found no differences. The D.W. Johnson & R.T. Johnson (in press) study used a measure in which students were assigned to new groups and asked to play a structured game, to determine whether or not a tendency toward cross-handicap interaction would transfer to a new setting and task. No differ-

ences were found, although the trend favored the cooperative treatments.

Finally, D.W. Johnson & R.T. Johnson (1981) found more cross-handicap acceptance as a work partner in a cooperative condition than in an individualistic one, although it is not stated whether positive effects were found both for acceptance of handicapped students by their non-handicapped peers and for acceptance of non-handicapped students by handicapped classmates. A methodological problem common to the Learning Together studies is the use of "individualistic" control groups, in which students are instructed not to interact. Students in these classes might thus interact less than students in untreated, traditional control groups, inflating the apparent benefits of the cooperative treatments for social outcomes.

Conclusions: Cooperative Learning and Mainstreaming. The research on cooperative learning and relationships between academically handicapped and non-handicapped students generally shows that cooperative learning can overcome this barrier to friendship and interaction. Further, in the cases of the Madden and Slavin (in press) and Slavin, Madden, and Leavey (1982) studies, these improvements were obtained at the same time as achievement was enhanced for all students in the class. These studies did not find significantly greater achievement for academically handicapped

students in the cooperative classes, probably because of the small numbers of academically handicapped students involved; in both studies, the academically handicapped students in the experimental groups out-performed those in the control groups by a larger amount than did the non-handicapped students (for whom the differences were statistically significant). The practical importance of these findings is that schools may meet the academic and social needs of their academically handicapped students while enhancing the academic achievement of their non-handicapped students. This is critical; as noted earlier, few schools would use a program designed to aid mainstreamed students if it did not also improve (or at least not retard) the achievement of the rest of the class.

The research on cooperative learning and mainstreaming is promising, but still at an early stage. Positive effects on cross-handicap relations are found less consistently than are positive effects of cooperative learning on other social outcomes, such as intergroup relations (see Slavin & Hansell, in press). Further, serious problems of generalizability from the immediate setting of the experiment are present in many of the studies. None of the studies uses long-term follow ups of sociometric findings or out-of-class observations to determine whether in-class observations have external validity. The advantage of the cooperative learning methods is that because they are alternative forms of

basic instruction, they can be used indefinitely, so the burden of long-term maintenance is not as heavy as it would be on a one-time "treatment." However, the studies by Rucker and Vincenzo (1970) and Lilly (1971), in which positive effects on the acceptance of academically handicapped students brought about by cooperative methods failed to maintain on follow up, indicate that long-term effects must be a concern in mainstreaming research.

Despite the shortcomings of the available research, the possibilities of cooperative learning for improving mainstreaming are promising. The fact that MAH students can work side by side with their non-handicapped peers, as full participants in class activities, is in itself important. All too often, "mainstreaming" involves putting academically handicapped students in regular classrooms where their learning problems cause them to be resegregated. If use of cooperative learning strategies in the mainstreamed classroom can make it possible for MAH students to be truly integrated with their non-handicapped classmates, this would represent an important step forward.

Individualized Instruction

Another means of completely integrating MAH students into class activities without singling them out is to provide completely individualized instruction for regular classes containing such students. This is probably the most fre-

quently used means of accommodating the needs of low achieving students in regular classes, yet there is little research on the effects of individualized instruction in regular classes on mainstreaming-related outcomes. Some studies (such as Calhoun & Elliott, 1977) used individualization in mainstreamed and self-contained classes, but did not compare use of individualization to use of other methods.

Two recent studies have measured outcomes of individualized and whole-class instruction on the achievement and social acceptance of MAH students in regular classes. One of these (Meece & Wang, 1982; Wang, 1982) evaluated an elaborate system of individualized instruction called the Adaptive Learning Environments Model, or ALEM. The ALEM program includes individually prescribed programmed materials in mathematics and reading, as well as exploratory activities (e.g., creative writing, music, problem solving) chosen by students, who budget their own time to complete teacher-assigned lessons and exploratory activities. ALEM also involves team teaching and instructional aides, allowing some teachers to teach small groups while others assist in the individualized program.

The evaluation of ALEM involved random assignment of MAH students to ALEM or to a resource room for all of their reading and mathematics instruction each morning. In the

afternoon, all students received the same whole group instruction in science, social studies, language arts, physical education, etc. MAH students in the ALEM program thus stayed with their regular classes all day, while resource room students were mainstreamed only in the afternoon.

Measures relating to social outcomes (Meece & Wang, 1982) were administered in late October (after two months of program implementation) and again in May. At the October assessment, MAH students in the ALEM classes were significantly higher than similar resource room students in self-assessments of cognitive and social competence, and in general self-esteem. On the May measures, ALEM students were still higher than resource room students on all three of these variables, but the differences were statistically significant only for the social competence measure. MAH students were also significantly (and substantially) better accepted by their classmates in the ALEM classes than were the MAH students in resource room classes, as measured by sociometric and peer-rating measures. On the peer-rating measure, academically handicapped students had peer acceptance ratings slightly higher than those of the non-handicapped students in both classes, while resource room MAH students were rated much lower than their non-handicapped classmates. Analyses of the achievement data (Wang, 1982) indicated that MAH students in the ALEM classes gained more, but not significantly more, than academically handicapped students in the

control classes in reading and mathematics achievement. Non-handicapped students learned equally well in the ALEM and control classes.

The second investigation of mainstreaming-related outcomes of individualized instruction was the Slavin, Madden, & Leavey (1982) study of Team Assisted Individualization (TAI) described earlier. The full TAI model uses both cooperative learning and individualized instruction, so the separate effects of each of these components cannot be determined from the TAI-control comparison. However, the TAI study also separately evaluated the individualized part of the program (without cooperative teams and team recognition). As noted, the outcomes of the individualized program without the teams were not as positive as those of the full TAI program, but they were still quite strong. The MAH students who experienced the individualized program were significantly higher than control students (controlling for pretests) on sociometric nominations as "best friend," and significantly lower in rejections. They were also rated by their teachers as having fewer behavior problems than control students in the areas of self-confidence, friendships, and negative peer behavior (but not classroom behavior). MAH students in the individualized classes were marginally higher than control students in liking of math class, but there were no differences on a self-esteem measure. MAH students scored non-significantly better in the individual-

ized program than in the control classes, but the students in the individualized classes as a whole scored marginally significantly better ($p < .09$) than control students on the Comprehensive Test of Basic Skills.

Thus, the data from these randomized experiments support a conclusion that MAH students in carefully constructed individualized instruction programs gain markedly in social acceptance by their non-handicapped classmates. As in the STAD study (Madden & Slavin, in press) and the TAI study (Slavin, Leavey, & Madden, 1982), MAH students learned more in the experimental conditions, but not significantly more. There is evidence from the Slavin et al. (1982) study that individualized instruction can also reduce behavior problems of academically handicapped students and increase the achievement of all students. The effects of individualized instruction on social outcomes of mainstreaming were unexpectedly large, given that individualization (in contrast to cooperative learning) is not typically seen as a social intervention (see Slavin, Madden, & Leavey, 1982).

Conclusions

Effects of Mainstreaming on Social and Academic Achievement Outcomes

Taken together, the methodologically adequate research on the academic and social outcomes of special vs. regular class placement clearly indicates that there are few if any advantages of full-time special placement for students with

mild academic handicaps. When differences have appeared, they have favored regular class placement with some form of support both for academic achievement and for the social acceptance and self-esteem of MAH students. There is some evidence that provision of resource services part of the day combined with regular class placement is more effective for improving student achievement than either full-day special education or full-day regular class placement, but this appears to depend on the quality of the resource room program.

The conclusion that mainstream placement tends to be superior to full-time special-class placement for students with mild academic handicaps in no way implies that if MAH students are simply assigned to regular classes, their problems will be solved. Very serious problems remain. In particular, MAH students in regular classes continue to be rejected by their non-handicapped classmates, and teachers still may not feel prepared to accommodate the special needs of MAH students. Thus, some of the most important research on mainstreaming concerns evaluation of programs designed to improve the outcomes of mainstreaming. Three types of programs were discussed: social skills training, cooperative learning, and individualized instruction.

Social skills training would probably be effective as a means of improving acceptance of MAH students in regular

classes, but the research on these strategies has generally taken place in self-contained special education settings, or in regular classes with withdrawn (but not necessarily academically handicapped) students as the target population.

A variety of cooperative learning interventions have been studied in mainstreamed settings. Short-term interventions in which MAH students work in cooperative groups to produce skits or group projects, or participate in cooperative sports activities, consistently improve acceptance of the MAH students and positive interactions between handicapped and non-handicapped students, but long-term maintenance of these changes has not been demonstrated. However, several cooperative learning programs designed to be used indefinitely have been evaluated, and these also tend to have positive effects on acceptance of MAH students. A combination of cooperative learning and individualized instruction has had particularly strong effects on social acceptance of MAH students, as well as on the achievement of all students (Slavin, Madden, & Leavey, 1982).

Individualized instruction, with or without cooperative learning groups, has also been found to have positive effects on acceptance of MAH students by their non-handicapped peers, as well as on other social-emotional outcomes.

Implications for Theory

Promoting Acceptance of Academically Handicapped Students. The research reviewed above is reasonably consistent in showing that MAH students who are mainstreamed in regular classes have better self-esteem, more appropriate behavior, and are less self-deprecating than are students in special classes. These findings clearly contradict the expectations of such researchers as Johnson (1950), who have expressed concern that negative affect directed at academically handicapped students and invidious comparisons with their non-handicapped peers would reduce their self-esteem. For students with mild academic handicaps, belonging may be the most important goal, rather than success relative to classmates. MAH students and non-handicapped students alike are sensitive to and intolerant of differences and defects in themselves and their peers (Parish, Baker, Arheart, & Adamchak, 1980). Students labeled as being part of a "special" group are rejected by their peers, especially if they exhibit any deviant behavior (Gottlieb, 1975).

The research on classroom-level interventions for the mainstreamed classroom is instructive for an understanding of the effects of mainstreaming itself. In a sense, it is surprising how effective the individualized instruction methods evaluated by Meece & Wang (1982) and Slavin, Madden, & Leavey (1982) were in improving the social acceptance of mainstreamed students. Individualized instruction hardly fulfills Allport's (1954) primary criteria for contact to

lead to positive intergroup relations: non-superficial, cooperative contact sanctioned by authorities. Contact between students in an individualized program is unlikely to be any more non-superficial or cooperative than are contacts in classes using more traditional methods. Thus, there may be other characteristics of individualization that can contribute to social acceptance of academically handicapped students.

We propose three principal criteria for the development of positive relationships between MAH and non-handicapped students:

1. There should be opportunities for non-superficial, cooperative contact, sanctioned by school authorities, between MAH and non-handicapped students.

2. It should be impossible, or nearly so, to identify the academically handicapped students as belonging to a special group.

3. The classroom organization should be non-competitive, to forestall development of a "pecking order" based on academic status.

The first criterion, non-superficial, cooperative contact sanctioned by school authorities between MAH and non-handicapped students, is of course Allport's (1954) principal criterion for positive race relations (see Gottlieb & Leyser, 1981; Slavin & Hansell, in press).

The second criterion, that it should be impossible, or nearly so, to identify the academically handicapped students

as belonging to a special group, is based on a substantial literature concerning short- and long-term negative social effects of labeling (see Hobbs, 1975; MacMillan, Jones, & Aloia, 1974). The problem is that children are very aware of and intolerant toward differences. When a group of "special" children is marched into their regular class for a few hours of "mainstreaming," the non-handicapped students quite naturally feel that there most be something wrong with these children. When the "special" children attend a special school or special class, then the non-handicapped students can be quite sure that there is something seriously wrong with them. Perceived dissimilarity is a strong barrier to formation of friendships (Lott & Lott, 1965). When non-handicapped students can clearly see that some of their classmates have been labeled by the school as "special," this perceived dissimilarity is likely to aggravate a tendency to reject low achievers, whether or not they are labeled as "special" (see Johnson, 1950; Lott & Lott, 1965).

The third criterion is based on a hypothesis that different classroom organization systems will create different attitudes toward low-achieving students. In a highly competitive classroom, students are made very aware of achievement rankings, and may feel anxious about their own place on the achievement continuum (Blau, 1954; Haines & McKeachie, 1967). This can lead to a high frequency of boastful comments and deprecating comments directed at students who are

doing less well (Stendler, Damrin, & Haines, 1951). Similarly, Ames, Ames, & Felker (1977) found that students who did poorly under a competitive contingency were more negatively evaluated by their peers than those who did poorly under a cooperative contingency. Thus, the climate of the classroom regarding low achieving students is likely to be improved by use of non-competitive methods, including individualized instruction as well as cooperative learning methods.

Thus, individualized instruction is likely to improve the acceptance of MAH students both by removing competition for grades and other rewards and by substantially obscuring formal labels for students. For example, in the Meece & Wang (1982) study, even if the non-handicapped students could have ranked each others' academic achievement fairly accurately after many months, they were far less likely than students in the control group to see the MAH students as strange. When the MAH students in the control group returned from their resource room, their non-handicapped classmates could not help seeing them as outsiders.

Cooperative learning programs meet all three criteria. They structure cooperative, non-superficial contact between MAH and non-handicapped students within the learning groups. These methods make it difficult to identify MAH students as "special," because they participate as equals in the cooper-

ative activities, and of course they remove the competition for grades and other rewards that is hypothesized to lead to negative affect toward low achievers.

It may be that combining cooperative learning and individualized instruction, to capitalize on the strengths of each approach, is the best strategy for integration of mainstreamed students. Team Assisted Individualization (Slavin, Leavey, & Madden, 1982; Slavin, Madden, & Leavey, 1982), which does combine cooperative learning with individualized instruction, was found to have substantial positive effects on the social acceptance and behavior of MAH students and on the achievement of students as a whole.

What does seem certain from the research on cooperative learning as well as the research on individualized instruction is that restructuring the regular classrooms attended by MAH students can be a very powerful means of fully integrating these students with their non-handicapped peers.

Mainstreaming and Academic Achievement. It would seem logical that if students have serious learning problems, a setting in which specially trained teachers provide individually tailored instruction to very small classes would be ideal for remediating these problems. How could virtually pre-ordained failure relative to classmates in regular classes be more beneficial to academically handicapped students than step-by-step success in a special education

class? Yet there is no evidence of any kind that self-contained special education is superior to placement in regular classes in terms of increasing the academic performance of MAH students, and the best evidence is that in general, it is regular class placement with appropriate supports that is better for the achievement of these students.

Special education can be seen as a special case of tracking, which is widely used to some extent in schools at all levels on the theory that instruction can be delivered more efficiently to a group that has similar levels of prior preparation. As much as teachers believe in tracking (see Wilson & Schmits, 1978), the evidence provides little consistent support for this practice. Tracking has generally been found to be harmful for the achievement of low and average achievers, and makes no difference for high achievers (Esposito, 1973; Goldberg, Passow, & Justman, 1966). Theories to account for the poor performance of low achievers in homogeneous classes (see Beckerman & Good, 1981; Esposito, 1973; Heathers, 1969) include low expectations for performance in low track classes (Brophy & Good, 1974), high proportions of behavior problems in these classes (Evertson, 1982), and inappropriately slow instructional pace in low-track classes (Dunkin, 1978).

Dynamics similar to those hypothesized for poor results of tracking may explain the failure of special education to

increase the achievement of students with mild academic handicaps. In addition, several authors have hypothesized that special education teachers are less effective in delivering instruction than regular class teachers because they tend to be more concerned about the social development and happiness of their students than about their academic achievement (Goldstein, 1964; Johnson, 1962). However, any explanation of the relative ineffectiveness of special classes that depends on presumed deficiencies in special education teachers or programs runs counter to Goldstein, Moss, & Jordan's (1965) findings that "ideal" special education programs were no better than regular class placement for MAH students, and fails to consider the fact that even excluding special education, low achieving students learn better in heterogeneous than in homogeneous classes (Beckerman & Good, 1981; Esposito, 1973). The evidence points to context effects (i.e., the effects of being in homogeneous or heterogeneous settings), rather than teacher effects.

The classroom interventions discussed above have been less successful in increasing the achievement of MAH students than in increasing their social acceptance and emotional adjustment. None of the cooperative learning interventions were found to significantly increase the achievement of the academically handicapped students, although there are suggestions that methodological issues inherent in the research (i.e., small sample sizes and great

achievement variability) may hide real gains. Some of the cooperative learning methods have been successful in increasing the achievement of students in general. Student Teams-Achievement Divisions (STAD), the method evaluated by Madden & Slavin (in press), has been found in several field experiments (e.g., Allen & VanSickle, 1981; Huber, Bogatzki, & Winter, 1982; Slavin & Karweit, 1981, 1982; Slavin & Oickle, 1981) to increase student achievement significantly more than traditional control groups, as have such similar methods as Teams-Games-Tournaments (DeVries & Slavin, 1978), Jigsaw II (Ziegler, 1981), and TAI (Slavin, Leavey, & Madden, 1982). These methods have been particularly effective with low achieving students (see Slavin, in press), so it seems likely that studies with longer durations and larger samples will find positive effects of these methods on achievement of MAH students. This may also be true for the individualized instruction methods discussed in this paper.

Implications for Practice

Perhaps the clearest implication for practice from the most methodologically adequate studies of mainstreaming is that while students with mild academic handicaps experience serious problems in regular classrooms, these problems should be confronted either by restructuring the regular classroom itself to better accommodate diverse needs or by carefully constructing resource programs to supplement

instruction in the regular class (or both). There is no support in the research for a retreat from mainstreaming toward self-contained special education classes. Training programs for regular teachers to help them meet the instructional and social-emotional needs of academically handicapped students must continue, and teachers should receive training in methods (such as cooperative learning, individualized instruction, or combinations of these) that enable them to meet diverse needs in the same classroom.

Future Directions

We need to understand much more about the academic and social effects of mainstreaming, and we need more research on practical instructional methods for the mainstreamed classroom. For example, we need to study the issue of pull-out programs, which on one hand may provide valuable special help to students with special needs, but on the other hand may disrupt these students' learning in their regular classes and identify them as "special" in their own eyes and in the eyes of their peers. We know little about mainstreaming from the perspective of the academically handicapped student; interview studies of MAH students in special education, part-time resource programs, or full-time regular class placements might provide an insight into their view of these arrangements. Some research (e.g., Budoff & Gottlief, 1976) has suggested that some categories of MAH students are more appropriate for mainstreaming than others.

Much more research is needed to determine whether a certain group of MAH students may benefit from special class placement. Future research energies should focus on the development and evaluation of special programming to support the MAH child in the regular class rather than on the special class vs. regular class issue. It is obvious that many students are too retarded or behaviorally disturbed to be mainstreamed; research on how to make this decision is especially needed.

However, the most important research to be done on mainstreaming concerns not whether MAH students should be mainstreamed, but how they should be incorporated in the regular class in such a way that their social and academic needs, as well as those of their non-handicapped classmates, can be most effectively met. The research on cooperative learning and individualized instruction in mainstreamed classrooms summarized in this review is a beginning; it indicates that changes in classroom structure can have major impacts on the social-emotional experience of the MAH student. However, much more research needs to be done to develop and evaluate programs for the mainstreamed class. Further research on cooperative learning should examine use of such programs over longer periods of time. More research is needed on the effects of various forms of individualization, including combinations of individualization and cooperative learning, on mainstreaming-related outcomes. Use of individualized

instruction in the regular classroom allows for what may be the solution to the paradox concerning full-time regular class placement vs. part-time resource programs, described earlier; it allows the regular teacher and the specially trained resource teacher to team teach a combined class including all MAH students, along with non-handicapped students. If the academically handicapped students need special help, the resource teacher can provide it without disrupting their regular class experience or singling them out (see Meece and Wang, 1982).

Of course, whenever interventions designed for the mainstreamed classroom are evaluated, the effects on the non-handicapped students must also be assessed. It would be foolish to use a program that improved the achievement or social-emotional adjustment of academically handicapped students if it did so at the expense of the achievement of the non-handicapped students. However, the evidence so far is that methods that are effective for MAH students are at least as effective as traditional methods (and usually more effective) for non-handicapped students. It may turn out that the most effective mainstreaming methods are those that recognize that <u>all</u> students are "special," in that they have unique academic and social needs, and that classroom organizational forms that are able to respond to these needs in the regular classroom setting are needed for all students, whether or not they have identifiable academic handicaps.

References

Abeson, A. Legal forces and pressures. In R.L. Jones (ed.), Mainstreaming and the Minority Child. Reston, VA: Council for Exceptional Children, 1976.

Alexander, C., & Strain, P. A review of educators' attitudes toward handicapped children and the concept of mainstreaming. Psychology in the Schools, 1978, 15, 390-396.

Allen, W., & VanSickle, R. Instructional effects of learning teams for low achieving students. Unpublished Manuscript, University of Georgia, 1981.

Allport, G. The Nature of Prejudice. Cambridge, MA: Addison-Wesley, 1954.

Ames, C., Ames, R., & Felker, D.W. Effects of competitive reward structure and valence of outcome on children's achievement attributions. Journal of Educational Psychology, 1977, 69, 1-8.

Armstrong, B., Johnson, D.W., & Balow, B. Effects of cooperative vs. individualistic learning experiences on interpersonal attraction between learning-disabled and normal-progress elementary school students. Contemporary Educational Psychology, 1981, 6, 102-109.

Ballard, M., Corman, L., Gottlieb, J., & Kaufman, M. Improving the social status of mainstreamed retarded children. Journal of Educational Psychology, 1977, 69, 605-611.

Beckerman, T., & Good, T. The classroom ratio of high- and low- aptitude students and its effect on achievement. American Educational Research Journal, 1981, 18, 317-327.

Blatt, B. The physical, personality, and academic status of children who are mentally retarded attending special classes as compared with children who are mentally retarded attending regular classes. American Journal of Mental Deficiency, 1958, 62, 810-818.

Blau, P. Cooperation and competition in a bureaucracy. American Journal of Sociology, 1954, 59, 530-535.

Brophy, J., & Good, T. Teacher-Student Relationships: Causes and Consequences. New York: Holt, 1974.

Bruininks, V.L. Peer status and personality characteristics of learning disabled and non-disabled students. Journal of Learning Disabilities, 1978, 11, 29-34.

Bruininks, V.L., Rynders, J.E., & Gross, J.C. Social acceptance of mildly retarded pupils in resource rooms and regular classes. American Journal of Mental Deficiency, 1974, 78, 377-383.

Bryan, T. Peer popularity of learning disabled children. Journal of Learning Disabilities, 1974, 7, 621-625.

Bryan, T. Peer popularity of learning disabled students: A replication. Journal of Learning Disabilities, 1976, 9, 307-311.

Bryan, T. Social relationships and verbal interactions of learning disabled children. Journal of Learning Disabilities, 1978, 11, 58-66.

Budoff, M., & Gottlieb, J. Special class EMR students mainstreamed: A study of an aptitude (learning potential) x treatment interaction. American Journal of Mental Deficiency, 1976, 81, 1-11.

Calhoun, G., & Elliott, R. Self concept and academic achievement of educable retarded and emotionally disturbed pupils. Exceptional Children, 1977, 44, 379-380.

Carroll, A.W. The effects of segregated and partially integrated school programs on self-concept and academic achievement of educable mental retardates. Exceptional Children, 1967, 34, 93-99.

Cassidy, V. & Stanton, J. An investigation of factors involved in the educational placement of mentally

retarded children: A study of differences between children in special and regular classes in Ohio. Columbus, OH: Ohio State University, 1959.

Cegelka, W., & Tyler, J. The efficacy of special class placement for the mentally retarded in proper perspective. Training School Bulletin, 1970, 65, 33-65.

Chennault, M. Improving the social acceptance of unpopular educable retarded pupils in special classes. American Journal of Mental Deficiency, 1967, 72, 455-458.

Christoplos, F., & Renz, P. A critical examination of special education programs. Journal of Special Education, 1969, 3, 371-379.

Cooper, L., Johnson, D.W., Johnson, R., & Wilderson, F. Effects of cooperative, competitive, and individualistic experiences on interpersonal attraction among heterogeneous peers. Journal of Social Psychology, 1980, 111, 243-252.

DeVries, D.L., & Slavin, R.E. Teams-Games-Tournament (TGT): Review of ten classroom experiments. Journal of Research and Development in Education, 1978, 12, 28-38.

Dunkin, M. Student characteristics, classroom processes, and student achievement. Journal of Educational Psychology, 1978, 70, 998-1009.

Dunn, L.M. Special education for the mildly retarded: Is much of it justified? Exceptional Children, 1968, 35, 5-22.

Elenbogen, M. A comparative study of some aspects of academic and social adjustment of two groups of mentally retarded children in special classes and regular classes. Dissertation Abstracts, 1957, 17, 2496.

Esposito, D. Homogeneous and heterogeneous ability grouping: Principal findings and implications for evaluating and designing more effective educational environments. Review of Educational Research, 1973, 43, 163-179.

Evertson, C. Differences in instructional activities in average- and low-achieving junior high English and math classes. Elementary School Journal, 1982, 82, 329-350.

Flynn, M. Regular class adjustment of EMR students attending a part-time special education program. Journal of Special Education, 1974, 8, 167-173.

Gampel, D., Gottlieb, J., & Harrison, R. Comparison of classroom behavior of special-class EMR, integrated EMR, low IQ, and nonretarded children. American Journal of Mental Deficiency, 1974, 79, 16-21.

Garry, R. Guidance Techniques for Elementary Teachers: The "Guess Who" Sociometric Technique. Columbus, OH: Merrill, 1963.

Gickling, E., & Theobald, J. Mainstreaming: Affect or effect. Journal of Special Education, 1975, 9, 317-328.

Glavin, J., Quay, H., Annesley, F., & Werry, J. An experimental resource room for behavior problem children. Exceptional Children, 1971, 38, 131-138.

Goldberg, M., Passow, A., & Justman, J. The Effects of Ability Grouping. New York: Teachers College Press, 1966.

Goldstein, H. Mentally retarded children in special programs. Journal of Education, 1964, 147, 95-100.

Goldstein, H., Moss, J., & Jordan, J. The efficacy of special class training on the development of mentally retarded children. (Cooperatice Research Project No. 619). Washington, D.C.: U.S. Office of Education, 1965.

Goodman, H., Gottlieb, J., & Harrison, R.H. Social acceptance of EMRs integrated into a non-graded elementary school. American Journal of Mental Deficiency, 1972, 76, 412-417.

Gottlieb, J. Attitudes toward retarded children: Effects of labeling and behavioral aggressiveness. Journal of Educational Psychology, 1975, 67, 581-585.

Gottlieb, J., Gampel, D., & Budoff, M. Classroom behavior of retarded children before and after integration into regular classes. Journal of Special Education, 1975, 9, 307-315.

Gottlieb, J., & Leyser, Y. Friendship between mentally retarded and nonretarded children. In S. Asher & J. Gottman, The Development of Children's Friendships. Cambridge: Cambridge University Press, 1981.

Gottlieb, J., Semmel, M.I., & Veldman, D.J. Correlates of social status among mainstreamed mentally retarded children. Journal of Educational Psychology, 1978, 70, 396-405.

Gresham, F. Social skills training with handicapped children: A review. Review of Educational Research, 1981, 51, 139-176.

Gresham, F., & Nagle, R. Social skills training with children: Responsiveness to modeling and coaching as a function of peer orientation. Journal of Consulting and Clinical Psychology, 1980, 18, 718-729.

Guskin, S., & Spiker, H. Educational research in mental retardation. In N. Ellis (ed.), International review of research in mental retardation (vol. 3). New York: Academic press, 1968.

Haines, D.B., & McKeachie, W.J. Cooperation versus competitive discussion methods in teaching introductory psychology. Journal of Educational Psychology, 1967, 58, 386-390.

Heathers, G. Grouping. In R.L. Ebel (ed.), Encyclopedia of Educational Research (4th ed.). New York: Macmillan, 1969

Hobbs, N. (ed.), Issues in the Classification of Children, Volumes 1 and 2. San Francisco: Jossey-Bass, 1975.

Hollifield, J., & Slavin, R.E. Disseminating Student Team Learning through federally funded programs: Appropriate technology, appropriate channels. Knowledge, in press.

Horne, M. Attitudes and mainstreaming: A literature review for school psychologists. Psychology in the Schools, 1979, 16, 61-67.

Huber, G., Bogatzki, W. & Winter, M. Cooperation: Condition and goal of teaching and learning in classrooms. Unpublished manuscript, University of Tubingen, Germany, 1982.

Iano, R.P., Ayers, D., Heller, H.B., McGettigan, T.F., & Walker, V.S. Sociometric status of retarded children in an integrative program. Exceptional Children, 1974, 41, 267-271.

Johnson, D.W., & Johnson, R.T. Instructional goal structure: Cooperative, competitive, or individualistic. Review of Educational Research, 1974, 44, 213-240.

Johnson, D.W., & Johnson, R.T. Learning together and alone. Englewood Cliffs, NJ: Prentice-Hall, 1975.

Johnson, D.W., & Johnson, R.T. Effects of cooperative and individualistic learning experiences on interethnic interaction. Journal of Educational Psychology, 1981, 73, 444-449.

Johnson, D.W., & Johnson, R.T. Effects of cooperative and individualistic instruction on the relationships and performance of handicapped and nonhandicapped students. Unpublished manuscript, University of Minnesota, 1980.

Johnson, D.W., & Johnson, R. The integration of the handicapped into the regular classroom: Effects of cooperative and individualistic instruction. Contemporary Educational Psychology, in press.

Johnson, G.O. A study of the social position of the mentally retarded child in the regular grades. American Journal of Mental Deficiency, 1950, 55, 60-89.

Johnson, G.O. Special education for the mentally retarded - A paradox. Exceptional Children, 1962, 29, 62-69.

Johnson, J. Special education and the inner city: A challenge for the future or another means of cooling the mark out? Journal of Special Education, 1969, 3, 241-251.

Johnson, R., & Johnson, D.W. Building friendships between handicapped and nonhandicapped students: Effects of cooperative and individualistic instruction. American Educational Research Journal, in press. (a)

Johnson, R., & Johnson, D.W. Effects of cooperative and competitive learning experiences on interpersonal attraction between handicapped and nonhandicapped students. Journal of Social Psychology, in press. (b)

Johnson, R., & Johnson, D.W. Effects of cooperative, competitive, and individualistic learning experiences on cross-handicap relationships and social development. Exceptional Children, in press. (c)

Johnson, R., Johnson, D.W., & Rynders, J. Effect of cooperative, competitive, and individualistic experiences on self-esteem of handicapped and nonhandicapped students. Journal of Psychology, 1981, 108, 31-34.

Johnson, R., Rynders, J., Johnson, D.W., Schmidt, B., & Haider, S. Interaction between handicapped and nonhandicapped teenagers as a function of situational goal structuring: Implications for mainstreaming. American Educational Research Journal, 1979, 16, 161-167.

Jones, R. Special education and the minority child. In B. Ring & D. Schrader (eds.) Distinguished Lectures in Special Education and Rehabilitation., Los Angeles: University of Southern California, 1973

Jones, R., & Gottfried, N. The prestige of special education teaching. Exceptional Children, 1966, 32, 465-468.

Kirk, S. Researchin education. In H. Stevens & R. Heber (eds.) Mental Retardation: A Review of Research. Chicago: The University of Chicago Press, 1964.

Lapp, E.A. A study of the social development of slow-learning children who were assigned part-time to regular classes. American Journal of Mental Deficiency, 1957, 62, 254-262.

Lilly, M.S. Improving social acceptance of low sociometric status, low achieving students. Exceptional Children, 1971, 28, 341-347.

Lott, A.J., & Lott, B.E. Group cohesiveness as interpersonal attraction: A review of relationships with antecedent and consequent variables. Psychological Bulletin, 1965, 64, 259-309.

Lowenbraun, S., & Affleck, J. Least Restrictive Environment. Seattle: University of Washington, 1978.

MacMillan, D. Mental Retardation in School and Society. Boston: Little, Brown, 1977.

MacMillan, D., Jones, R., & Aloia, G. The mentally retarded label: A review of research and theoretical analysis. American Journal of Mental Deficiancy, 1974, 79, 241-261.

Madden, N.A., & Slavin, R.E. Cooperative learning and social acceptance of mainstreamed academically handicapped students. Journal of Special Education, in press.

Marburg, C., Houston,, B., & Holmes, D. Influence of multiple models on the behavior of institutionalized retarded children: Increased generalization to other models and other behaviors. Journal of Consulting and Clinical Psychology, 1976, 44, 514-519.

Martino, L., & Johnson, D.W. The effects of cooperative vs. individualistic instruction on interaction between normal-progress and learning-disabled students. Journal of Social Psychology, 1979, 107, 177-183.

Meece, J., & Wang, M. A comparative study of social attitudes and behaviors of mildly handicapped children in two mainstreaming programs. Paper presented at the Annual Convention of the American Educational Association, New York, 1982.

Meyerowitz, J. Self-derogation in young retardates and special class placement. Child Development, 1962, 33, 443-451.

Meyers, C.E. Realities in teacher recruitment: Some data on students and teachers. Mental Retardation, 1964, 2, 42-46.

Moreno, J. Who Shall Survive? Washington, D.C.: Nervous and Mental Disease Publishing Co., 1934.

Nevin, A., Johnson, D.W., & Johnson, R. Effects of group and individual contingencies on academic performance and social relations of special needs students. Journal of Social Psychology, in press.

Oden, S., & Asher, S. Coaching children in social skills for friendship making. Child Development, 1977, 48, 495-506.

Parish, T., Baker, S., Arheart, K., & Adamchak, P.G. Normal and exceptional children's attitudes toward themselves and one another. Journal of Psychology, 1980, 104, 249-253.

Piers, E., & Harris, D. The Piers-Harris Children's Self-Concept Scale. Nashville, TN: Counselor Recordings and Tests, 1969.

Quay, L. Academic skills. In N. Ellis (ed.), Handbook of Mental Deficiency. New York: McGraw-Hill, 1963.

Rucker, C.N., Howe, C.E., & Snider, B. The participation of retarded children in junior high academic and non-academic regular classes. Exceptional Children, 1969, 26, 617-623.

Rucker, C.N., & Vircenzo, F.M. Maintaining social acceptance gains made by mentally retarded children. Exceptional Children, 1970, 36, 679-680.

Rynders, J., Johnson, R., Johnson, D.W., & Schmidt, B. Producing positive interaction among Downs Syndrome and

nonhandicapped teenagers through cooperative goal structuring. American Journal of Mental Deficiency, 1980, 85, 268-273.

Sabatino, D. An evaluation of resource rooms for children with learning disabilities. Journal of Learning Disabilities, 1971, 4, 84-93.

Scranton, T., & Ryckman, D. Sociometric status of learning disabled children in an integrative program. Journal of Learning Disabilities, 1979, 12, 402-407.

Semmel, M., Gottlieb, J., & Robinson, N. Mainstreaming: Perspectives on educating handicapped children in the public schools. In D. Berliner (Ed.), Review of Research in Education. Washington, D.C.: American Educational Research Association, 1979.

Siperstein, G., Bopp, M., & Bak, J. Social status of learning disabled children. Journal of Learning Disabilities, 1978, 11, 98-102.

Shotel, J., Iano, R., & McGettigan, J. Teacher attitudes associated with the integration of handicapped children. Exceptional Children, 1972, 38, 677-683.

Slavin, R.E. Classroom reward structure: An analytic and practical review. Review of Educational Research, 1977, 47(4), 633-650.

Slavin, R.E. Cooperative learning. Review of Educational Research, 1980, 50, 315-342. (a)

Slavin, R.E. Using Student Team Learning: Revised Edition. Baltimore, MD: Center for Social Organization of Schools, The Johns Hopkins University, 1980. (b)

Slavin, R.E. A case study of psychological research affecting classroom practice: Student Team Learning. Elementary School Journal, 1981, 82, 5-17.

Slavin, R.E. Cooperative Learning New York: Longman, in press.

Slavin, R.E., & Hansell, S. Cooperative learning and intergroup relations: Contact theory in the classroom. In J.Epstein & N. Karweit (eds.), Friends in School. New York: Academic Press, in press

Slavin, R.E., & Karweit, N. Cognitive and affective outcomes of an intensive student team learning experience. Journal of Experimental Education, 1981, 50, 29-35.

Slavin, R.E., & Karweit, N. Student teams and mastery: A factorial experiment in urban Math 9 classes. Paper presented at the Annual Convention of the American Educational Research Association, New York, 1982.

Slavin, R.E., Leavey, M., & Madden, N.A. Effects of student teams and individualized instruction on student mathematics achievement, attitudes, and behaviors. Paper presented at the Annual Convention of the American Educational Research Association, New York, 1982.

Slavin, R.E., Madden, N.A., & Leavey, M. Combining cooperative learning and individualized instruction: Effects on the social acceptance, achievement, and behavior of mainstreamed students. Paper presented at the Annual Convention of the American Educational Research Association, 1982.

Slavin, R.E., & Oickle, E. Effects of cooperative learning teams on student achievement and race relations: Treatment by race interactions. Sociology of Education, 1981, 54, 174-180.

Smith, H.W., & Kennedy, W. Effects of three educational programs on mentally retarded children. Perceptual and Motor Skills, 1967, 24, 174.

Stendler, C., Damrin, D., & Haines, A.C. Studies in cooperation and competition: I. The effects of working for group and individual rewards on the social climate of children's groups. Journal of Genetic Psychology, 1951, 79, 173-197.

Stokes, T., & Baer, D. An implicit technology of generalization. Journal of Applied Behavior Analysis, 1977, 10, 349-367.

Strain, P. Increasing social play of severely retarded preschoolers with socio-drama activities. Mental Retardation, 1975, 13, 7-9.

Strain, P., & Kerr, M.M. Mainstreaming of Children in Schools. New York: Academic Press, 1981.

Strain, P., Kerr, M.M., & Ragland, E. The use of peer social initiations in the treatment of social withdrawal. In P. Strain (ed.), The Utilization of Classroom Peers as Behavior Change Agents. New York: Plenum, 1981.

Thurstone,T. An evaluation of education of mentally handicapped children in special classes and in regular grades (Cooperative Research Project No. SAE 6452). Washington, D.C.: U.S. Office of Education, 1959.

van Hasselt, M., Hersen, M., Whitehall, M., & Bellack, A. Social skill assessment and training for children: An evaluative review. Behavior Research and Therapy, 1979, 17, 413-437.

Walker, V. The efficacy of the resource room for educating retarded children. Exceptional Children, 1974, 40, 288-289.

Wang, M. Mainstreaming exceptional children: Some instructional design and implementation considerations. Learning Research and Development Center, University of Pittsburgh, 1980.

Wang, M. Effective mainstreaming is possible -- Provided that... Learning Research and Development Center, University of Pittsburgh, 1982.

Wilson, B. & Schmits, D. What's new in ability grouping? Phi Delta Kappan, 1978, 535-536.

Ziegler, S. The effectiveness of cooperative learning teams for increasing cross-ethnic friendship: Additional evidence. Human Organization, 1981, 40, 264-268.